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Progress

Montana Pole Superfund site

By the Montana Department of Health and Environmental Sciences and the U.S. Environmental Protection Agency

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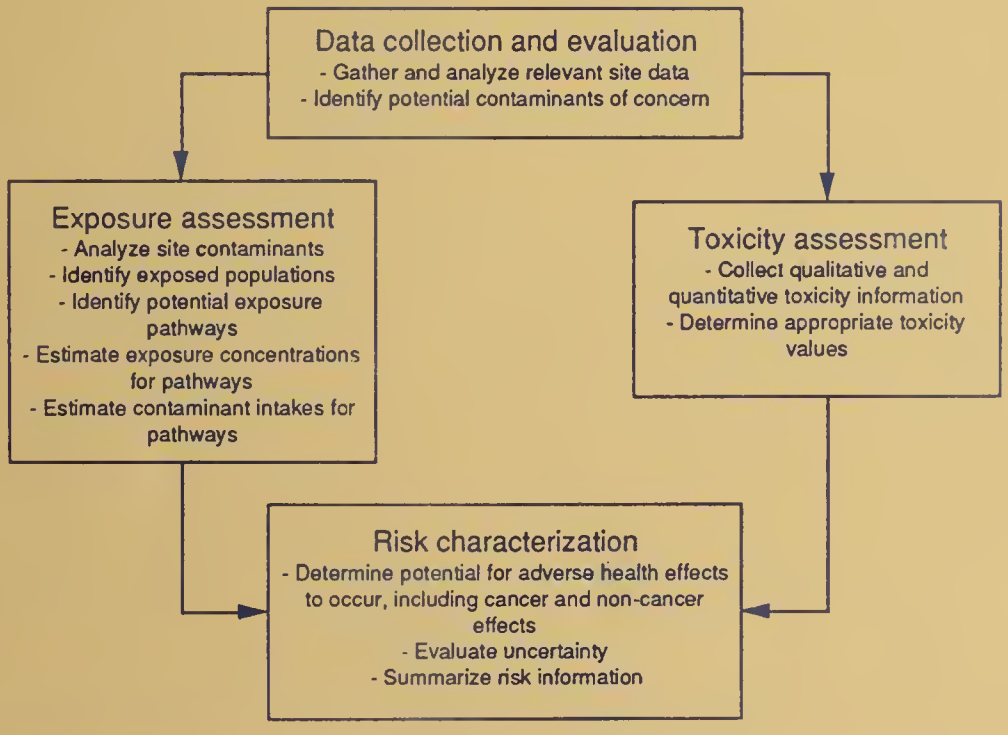
Introduction

The highest priority of the Superfund program is to protect public health and the environment. Before a cleanup plan can be chosen for a Superfund site such as Montana Pole, the Montana Department of Health and Environmental Sciences (MDHES) must know what risks the site contaminants may pose to public health and the environment. This process of evaluating risks is called "risk assessment." The risk assessment is usually conducted during the remedial investigation.

At the Montana Pole site, MDHES is planning the risk assessment and has released to the public the Preliminary Endangerment Assessment which outlines the plan for conducting the risk assessment. This document includes methods of study, toxicity information, an exposure assessment, chemicals of concern, pathways of contamination and exposure scenarios. Data gained from sampling of surface and groundwater, soils, air, liquids and sludges will help MDHES assess potential risk.

Because of the importance of the risk assessment, MDHES is seeking public comment on the Preliminary Endangerment Assessment. Comments should be sent to Brian Antonioli, c/o Montana Department of Health and Environmental Sciences, 836 Front Street, Helena, MT 59620. MDHES will hold a public meeting to discuss the Preliminary Endangerment Assessment, Wednesday, March 20 at 7 p.m., at the Pintlar Room in the Montana Tech Student Union Building. The public is encouraged to attend this meeting and discuss the document and the risk assessment process.

The Risk Assessment Process



Understanding the risk assessment

Step 1:

The contaminants at the site

Under the direction of MDHES, Atlantic Richfield Corporation (ARCO) is conducting site investigations (remedial investigation) which will result in information necessary for the endangerment assessment. Contaminants at the site include diesel, flourene, arsenic, pentachlorophenol, benzo(a)pyrene and a number of petroleum-based compounds. ARCO has obtained samples from surface and groundwater, soils, air, liquids, sludges and water from an oil/water separation process. Following is a summary of contamination found in each of those areas:

1. Groundwater - pentachlorophenol
2. Soils - Pentachlorophenol, dioxins, pyrene, arsenic and phenanthrene
3. Surface Water - Arsenic, pentachlorophenol
4. Liquids/Sludges - Pentachlorophenol, dioxin, xylenes and toluene
5. Water from the separator - pentachlorophenol, xylenes, pyrene

The risk assessment includes an evaluation of potential exposure pathways. In other words, MDHES looks at how people and the environment may come in contact with contaminants.

Step 2:

Determining how contaminants find their way to the public:

The exposure assessment:

There are a number of ways in which the public may come in contact with site contamination. MDHES will consider the following potential pathways for the Montana Pole Risk Assessment:

1) ingestion of soils, surface and/or groundwater, and contaminated home-grown produce
2) inhalation,
3) skin absorption,

MDHES uses standardized averages for human body weight and how much the person will ingest , inhale or absorb. Then MDHES must consider the length of time exposure may last. MDHES estimates a person will breathe 20 cubic meters of air per day. Because the ground in Butte is usually frozen from November through March (155 days), soils exposure is based on the remaining 210 days a year. For ingestion rates, MDHES will base their evaluation on a person of average adult weight and a child of average weight. It is important to note that exposure evaluation can only be based on average exposure for an average person. It would be impossible for MDHES to make exact evaluations for each person potentially affected by the site because there are so many variables in lifestyles and body composition.

For instance, a resident living near the site may breathe in "x" amount of contaminated air for "y" number of hours per day for "z" number of years. For one exposure pathway, MDHES will assume that an adult will be exposed every day of the year for 30 years while a child will be exposed for 12 years.

Some Butte residents live within one-quarter mile of the Montana Pole site and approximately 35,000 people live within two miles of the site. One resident who formerly owned the plant lives on site. There is also an auto body shop and an architect's office on site. Most of the site is now abandoned and some of the site is fenced to restrict public access. Six on-site storage buildings contain contaminated soil and debris awaiting a disposal decision. Much of the site is open ground and is used by motorcyclists, bicyclists and other recreationists. Some local children swim and play in Silver Bow Creek which is the site's northern boundary. Because the contaminants have the potential to be absorbed through the skin and/or taken into the lungs and mouth, MDHES will evaluate exposure potential for individuals who use the site.

Potential pathways to the environment

At the Montana Pole site it is possible, even likely, that wildlife and other components of the environment will come in contact with site contaminants via water, air and soil. Migratory waterfowl, muskrats, raccoons and aquatic life are likely to come in contact with contaminants. Environmental issues will be investigated in more depth during the final risk assessment.

Step 3:

Toxicity assessment

The purpose of the toxicity assessment is to assess the potential for each contaminant of concern to cause adverse health affects in people exposed to them. The toxicity assessment also should provide information about how much contaminant the subject must come in contact with before an adverse health effect is noted. Adverse health effects include both cancer-causing and other effects.

Following is a brief summary of the potential health effects of some of the contaminants found at the Montana Pole site. More complete information is listed in the *Preliminary Endangerment Assessment* which can be checked out of the Butte Public Library, Montana Tech Library and the State Library in Helena.

Pentachlorophenol (PCP)

PCP is readily absorbed when it comes in contact with a person's digestive or respiratory system or the skin. Exposure to large amounts of PCP in a short time may result in profuse sweating, fever, weight loss, gastrointestinal irritation, lung, eye, liver and kidney damage, convulsions, heart failure and even death. Longer-term effects include a higher incidence of low-grade infections and depressed kidney function.

Polynuclear Aromatic Hydrocarbons (PAHs):

Limited information is available on PAHs. Because

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they are fat-soluble, PAHs are easily absorbed into the body through the lungs, skin and digestive tract. Once absorbed, these compounds migrate to all tissues but are particularly concentrated in those tissues with high fat content. Exposure to large amounts of PAHs in a short time may result in sun sensitivity, skin reddening, itching and burning. Some PAHs are potential carcinogens (cancer-causers).

Arsenic:

Arsenic may be ingested through the mouth, absorbed through the skin, or inhaled and absorbed through the lungs. From the lungs, arsenic is transported to the blood. About 90 percent of this arsenic in the blood may then be excreted in urine. Chronic arsenic poisoning symptoms may include digestive disturbance, liver and kidney damage, and skin problems. Other effects of arsenic poisoning may include skin cancer and damage to fetuses whose mothers are in contact with arsenic.

Step 4:

Evaluating risk

The next step in assessing risk is to determine how risky the exposure to a contaminant may be. Risks are divided into carcinogenic and noncarcinogenic (see section about classification of contaminants). For carcinogens, the daily exposure is multiplied by the cancer potency of the contaminant resulting in excess cancer risk. If the resulting excess cancer risk is determined to be one additional case of cancer in one million people, this means there is a one in one million chance that a person may develop cancer over a 70-year lifetime as a result of being exposed to the given contaminant.

When evaluating the risk of noncarcinogenic contaminants, MDHES must compare the estimated daily intake to a level of intake already deemed to be dangerous. If the daily intake potential is greater than the dangerous level, then the contaminant is considered a risk to public health.

Step 5:

Identify additional data to be gathered

Before MDHES can complete a final risk assessment, all necessary information about the site must be available. MDHES will evaluate the information gathered so far and decide if more data is needed .

Cancer-causing or not?

Chemicals of concern are classified as to their potential to cause cancer, known as carcinogenicity. Following are the carcinogenicity categories as defined for use in Superfund risk assessments:

Group A - Human Carcinogen

This group is used only when there is *sufficient* evidence from scientific studies of humans to support a cause-effect relationship between the contaminant and cancer.

Group B - Probable Human Carcinogen

This group includes contaminants for which the evidence of carcinogenicity based on scientific studies of humans is *limited*. This category also includes contaminants which showed a *sufficient* cause-effect relationship to cancer in scientific studies of animals. Group B is divided into two subgroups:

Group B1: This group includes contaminants which show *limited* evidence of carcinogenicity in scientific studies of humans, but show *sufficient* evidence in studies of animals as if it presented a carcinogenic risk to people.

Group B2: This group includes contaminants which show *inadequate* evidence or *no data* of carcinogenicity in scientific studies of humans, but show *sufficient* evidence in studies on animals.

Group C - Possible Human Carcinogen:

In this category, there is *no evidence* of carcinogenicity in scientific studies of humans and only *limited* evidence in animal studies.

Group D - Not Classifiable as to Human Carcinogenicity:

This group is generally used for contaminants for which there is *inadequate* or *no* human and animal study evidence available.

Group E - Evidence of Non-Carcinogenicity for Humans:

This group includes contaminants that show *no evidence* of carcinogenicity in at least two adequate animal tests in different species or in both adequate human and animal studies.

Share your thoughts with us

Because of the importance of the final risk assessment, MDHES is seeking public comments on the Preliminary Risk Assessment. MDHES plans to complete the Draft Final Risk Assessment by March 31, 1991, so the public is encouraged to comment or ask questions as soon as possible. The public will have an opportunity to comment on the Draft Final Risk Assessment also. To comment or ask questions, the public is encouraged to attend the public meeting March 20 or write to Site Project Officer Brian Antonioli, Montana Department of Health and Environmental Sciences, 836 Front St., Helena, MT 59620 or call him at 1-800-648-8465 in Helena.

Get Involved !
Montana Pole Superfund Risk Assessment Public meeting

Wednesday, March 20
7 p.m.
Pintlar Room, Montana Tech Student Union Building

The Montana Department of Health and Environmental Sciences will hold a public meeting to discuss the Preliminary Baseline Risk Assessment for the Montana Pole Superfund site. A toxicologist under contract to MDHES will be on hand to discuss risk and answer questions. MDHES will also update the public about site activities.
For more information, call Brian Antonioli or Janie Stiles at 1-800-648-8465 or 444-1420 in Helena.

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